Northern Everglades Initiative Update

Tom Teets, Program Implementation Manager
Temperince Morgan, Lead Technical Program Specialist

Water Resources Advisory Commission- Lake Okeechobee Committee
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Lake Okeechobee Technical Plan Requirements

- **Identify facilities to achieve TMDL**
  - **Size**
  - **Location**
  - **Schedule**
  - **Budget**
  - **Costs**
- **Provide additional measures to increase water storage and reduce excess water levels in lake and discharges to tide**
  - **Identify storage goal to achieve desired lake levels and inflow volumes to estuaries while meeting other water related needs**

Phase II Technical Plan
Lake Okeechobee Watershed

Management Measures

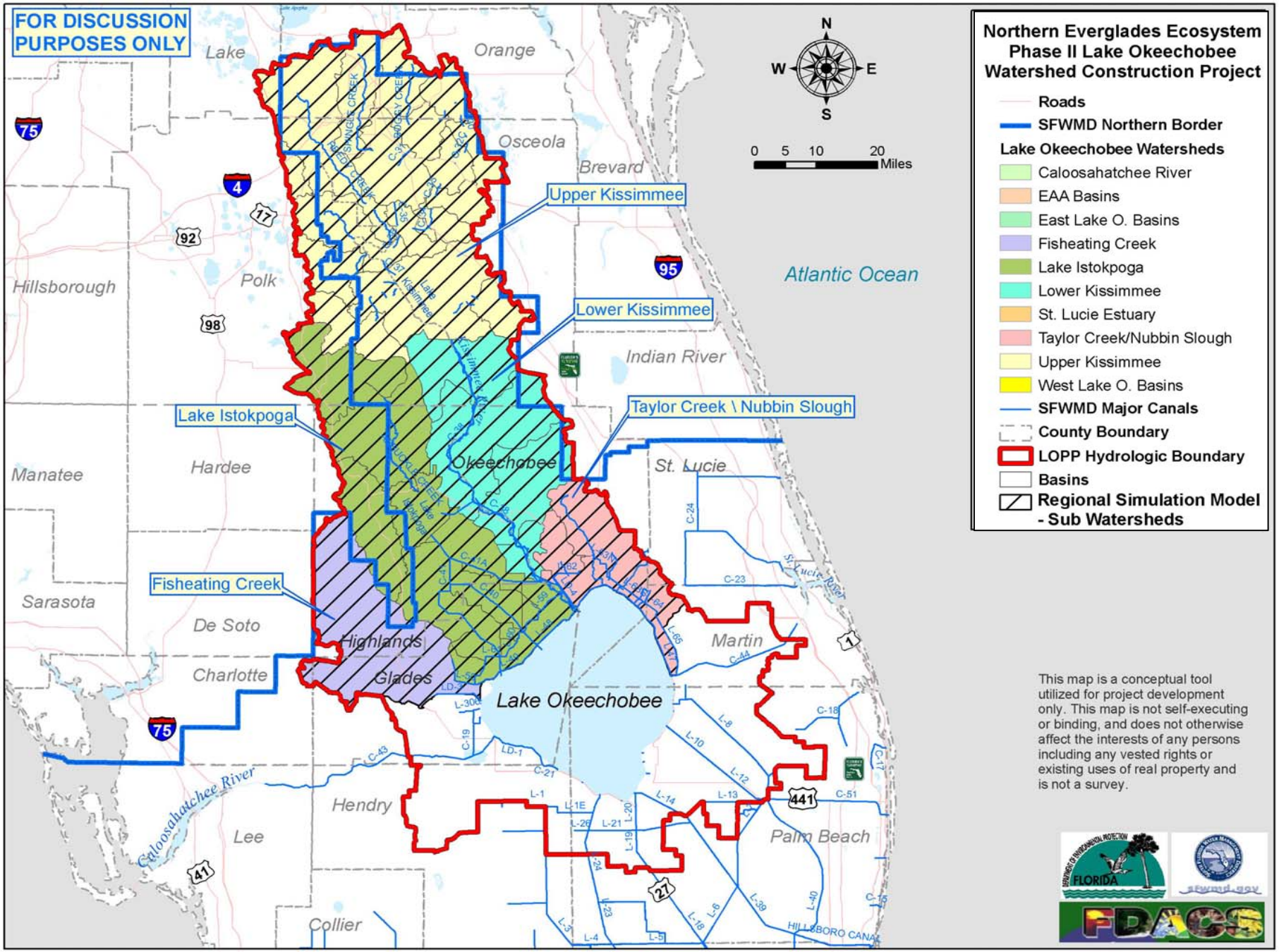
- Initial step compile and sort management measures by levels
- Levels of management measures
  - Level 1- Already constructed/implemented or construction/implementation imminent
  - Level 2- Construction/implementation likely; Detailed design/activity development ongoing; Location well defined
  - Level 3- Implementation certainty unknown; Conceptual level of design/activity development complete; Location defined
  - Level 4- Implementation certainty unknown- Conceptual idea; May have rough order of magnitude cost and/or general basin location
  - Level 5- Implementation certainty unknown-Conceptual idea with limited information

Water Quality and Quantity Analyses

- **Water Quantity**
  - **Water Budget analysis using Regional Simulation Model**
- **Water Quality**
  - **Spreadsheet evaluation of phosphorus reduction**
  - **Builds upon 2007 Lake Okeechobee Protection Plan Update**

Water Quantity Analysis

- **Water Budget analysis using Regional Simulation Model.**
- **Area north of Lake Okeechobee subdivided into 5 sub-watersheds**
  - **Upper Kissimmee**
  - **Lower Kissimmee**
  - **Lake Istokpoga**
  - **Fisheating Creek**
  - **Taylor Creek/Nubbin Slough**
- **Management measures with affect on water budget such as reservoirs or STAs are generally simulated as one facility per sub-watershed**


FOR DISCUSSION PURPOSES ONLY
Northern Everglades Ecosystem Phase II Lake Okeechobee Watershed Construction Project
Roads
SFWMD Northern Border
Lake Okeechobee Watersheds
Caloosahatchee River
EAA Basins
East Lake O. Basins
Fisheating Creek
Lake Istokpoga
Lower Kissimmee
St. Lucie Estuary
Taylor Creek/Nubbin Slough
Upper Kissimmee
West Lake O. Basins
SFWMD Major Canals
County Boundary
LOPP Hydrologic Boundary
Basins
Regional Simulation Model - Sub Watersheds
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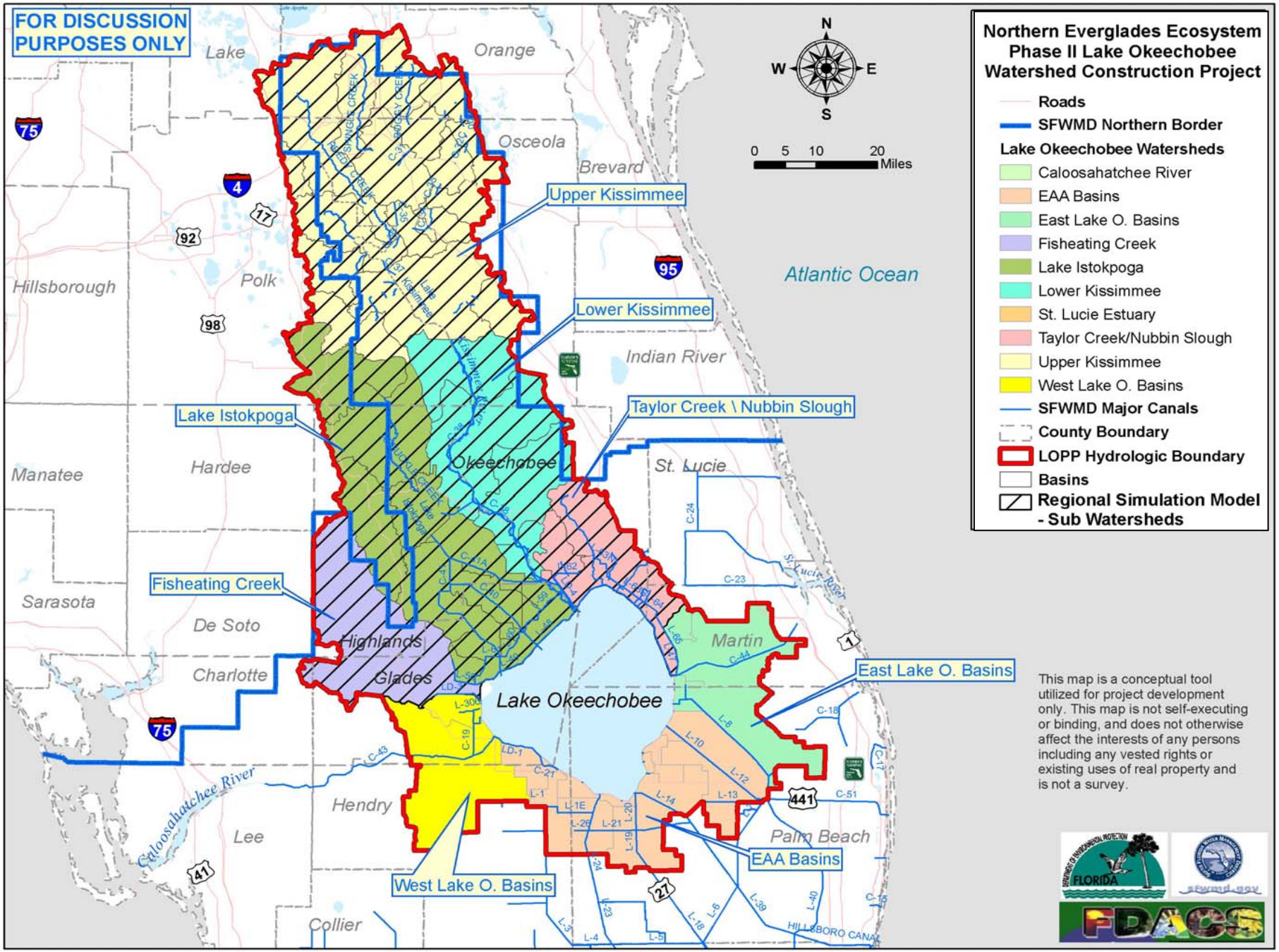
Upper Kissimmee
Lower Kissimmee
Lake Istokpoga
Taylor Creek \ Nubbin Slough
Fisheating Creek
Lake Okeechobee
Atlantic Ocean
Lake
Orange
Osceola
Brevard
Polk
Hillsborough
Indian River
Okeechobee
St. Lucie
Manatee
Hardee
Martin
Sarasota
De Soto
Highlands
Glades
Charlotte
Hendry
Lee
Collier
Palm Beach
Caloosahatchee River
This map is a conceptual tool utilized for project development only. This map is not self-executing or binding, and does not otherwise affect the interests of any persons including any vested rights or existing uses of real property and is not a survey.

Water Quality Analysis

- **Spreadsheet analysis process**
  - **Period of record: 1991- 2005**
  - **Phosphorus reduction for each management measure estimated based upon best available information**
  - **Phosphorus reductions applied on a sub-watershed basis (9 sub-watersheds)**
  - **Shows incremental progress toward meeting Lake Okeechobee Total Maximum Daily Load**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Alternatives 1, 2 and 3

Alternative 1 Summary

- **Alternative 1 includes-**
  - **Level 1, 2, and 3 Management Measures**
  - **CERP Lake Okeechobee Watershed Project Tentatively Selected Plan features not in Levels 1-3**
    - **Kissimmee Reservoir**
    - **Istokpoga Reservoir**
    - **Istokpoga STA**

Alternative 1 Management Measures

- **Management measures applied throughout Lake Okeechobee Watershed**
  - **Source Control- Agricultural and Urban**
  - **Lake Okeechobee Works of the District**
  - **Lake Okeechobee and Estuary Watershed Basin Rules/Environmental Resources Permitting**
  - **Alternative water storage options**
- **Lower Kissimmee Sub Watershed- reservoir, ASR**
- **Taylor Creek/Nubbin Slough Sub Watershed- reservoir, ASR, STAs, water quality projects, stormwater facilities**
- **Lake Istokpoga Sub Watershed- reservoirs, ASR, STAs**

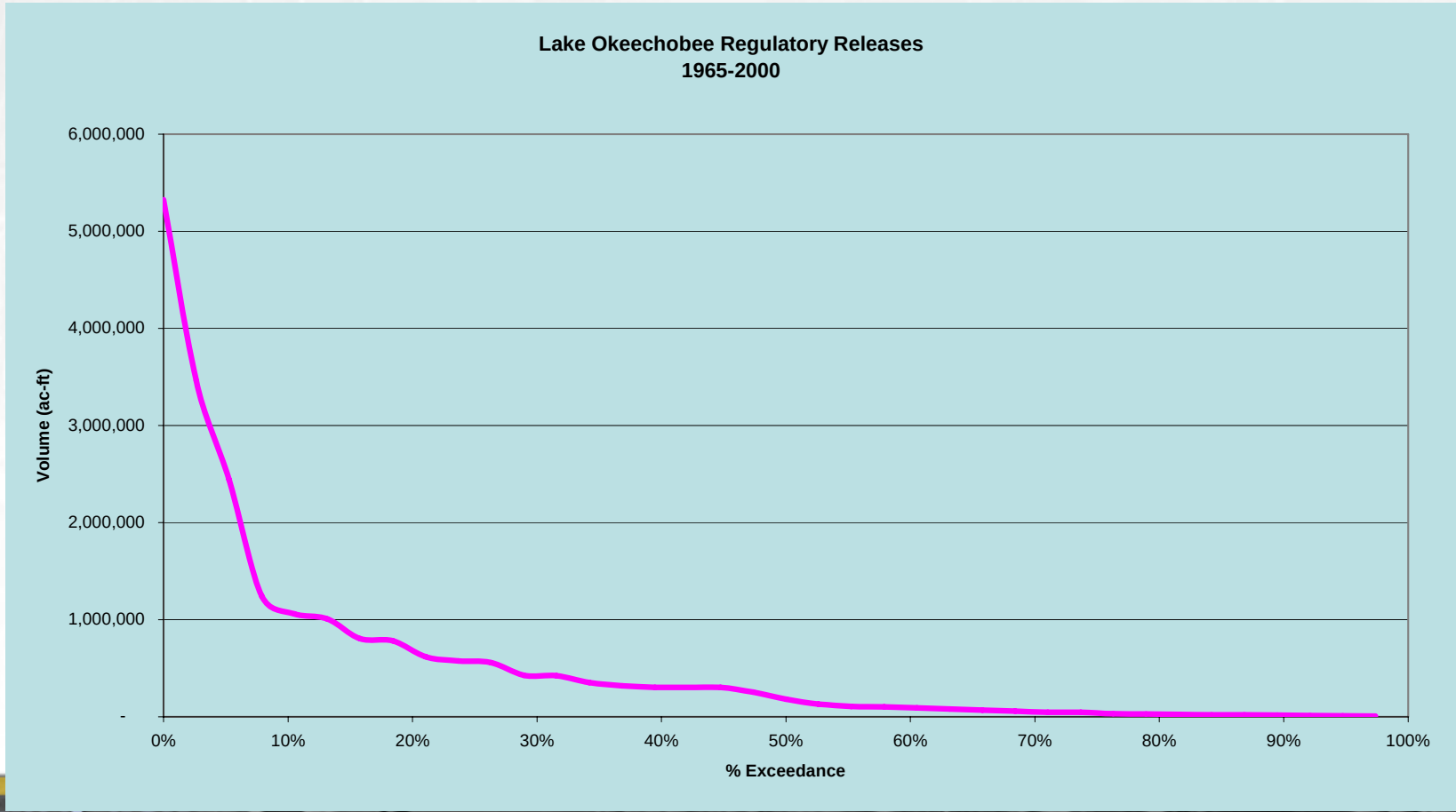
Alternatives 2, 3, and 4

- **Alternatives 2 and 3 build upon Alternative 1**
- **Alternative 2**
  - **Focus on storage to meet Lake Okeechobee stage envelope and estuaries salinity envelopes**
  - **Additional storage in Lower Kissimmee, Lake Istokpoga and Fisheating Creek**
  - **~1.3 million acre feet of storage**
- **Alternative 3**
  - **Focus on meeting Lake Okeechobee Total Maximum Daily Load**
  - **Taylor Creek/Nubbin Slough- Deep Injection Well, S-133 Water Quality Treatment**
  - **Lake Istokpoga and Fisheating Creek- STAs, Reservoir assisted- STAs**
  - **EAA- STA adjacent to S-4**
- **Alternative 4**
  - **Integrates Alternative 2 and 3**

Alternative 1, 2, 3 Water Quantity Analysis

Defining the magnitude of the Problem

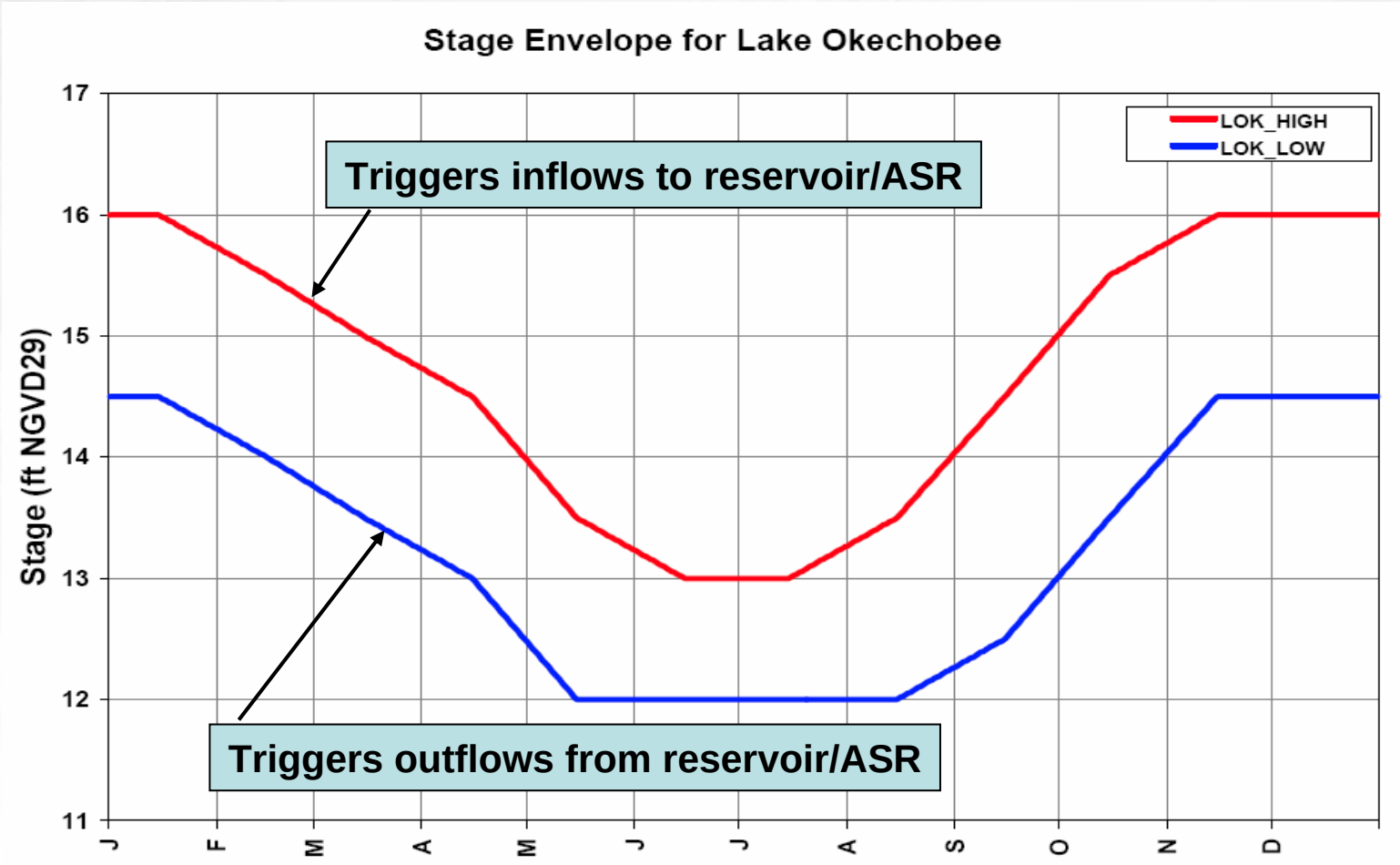
Lake Okeechobee regulatory releases
based upon Restudy 2050 Future Base



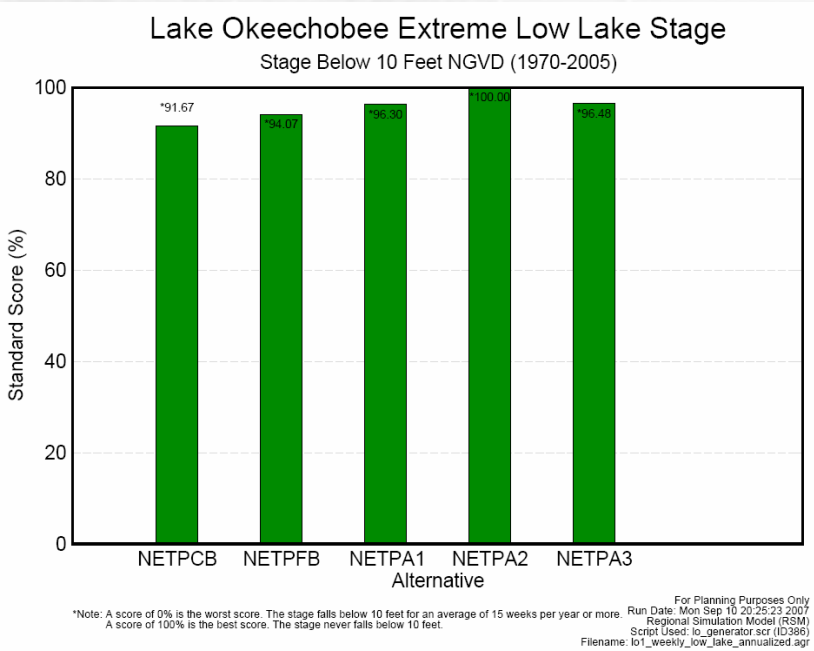
Magnitude of Storage of Alternatives 1, 2 and 3

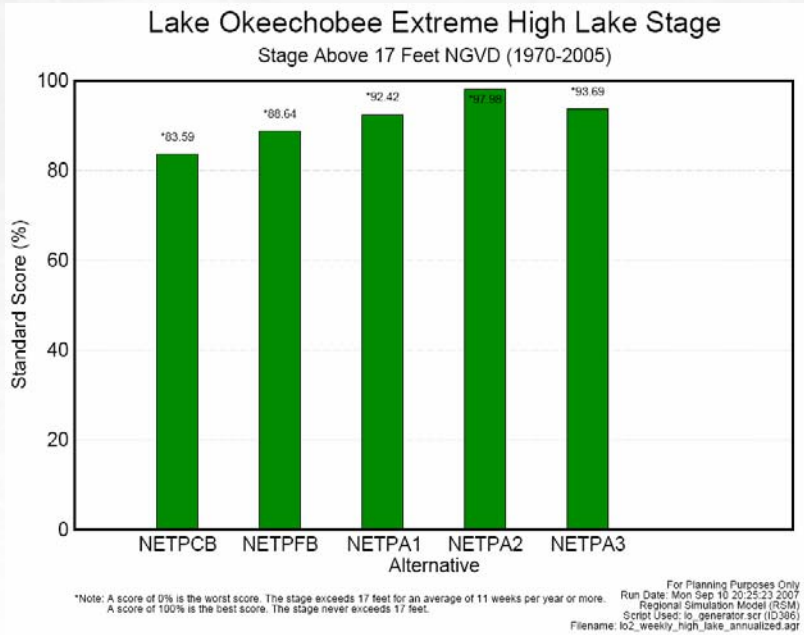
- **Alternative 1- ~265,000 ac ft- surface storage**
- **Alternative 2- ~1,300,000 ac ft- surface storage**
- **Alternative 3 ~ same as Alternative 1- water quality treatment is the focus of Alternative 3**

Regional Trigger For Inflows/Outflows Through Reservoir and ASR Management Measures



Lake Okeechobee Performance





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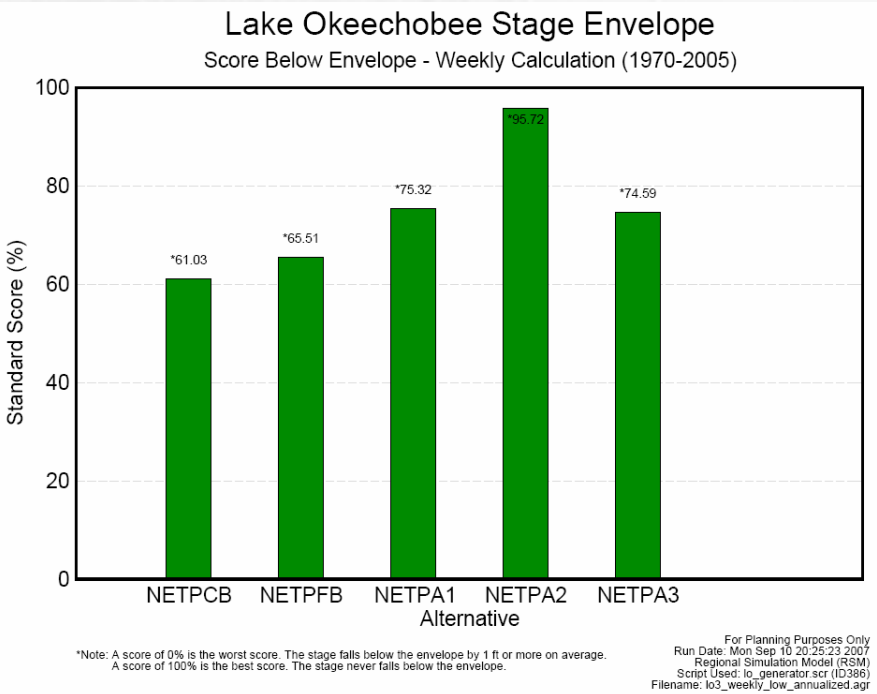
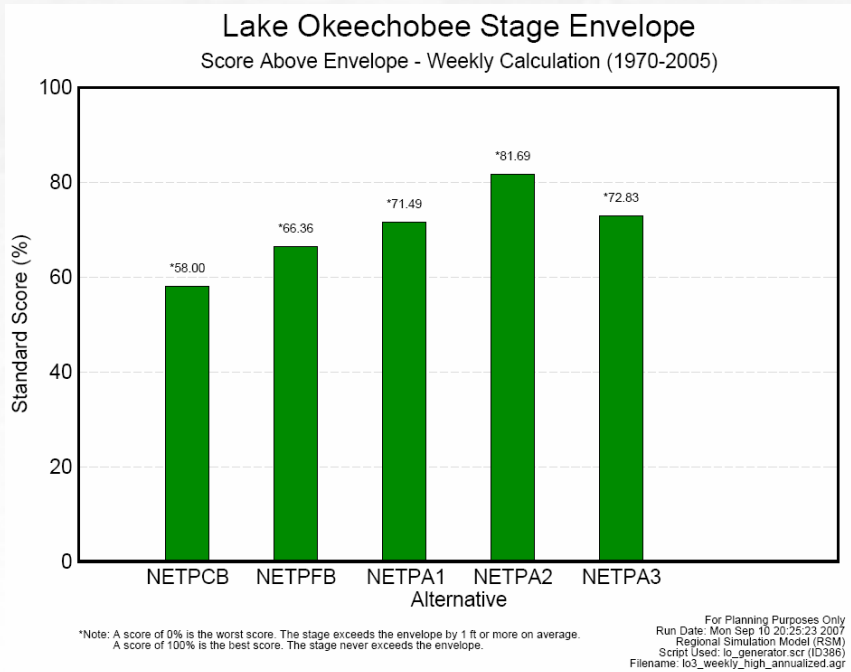
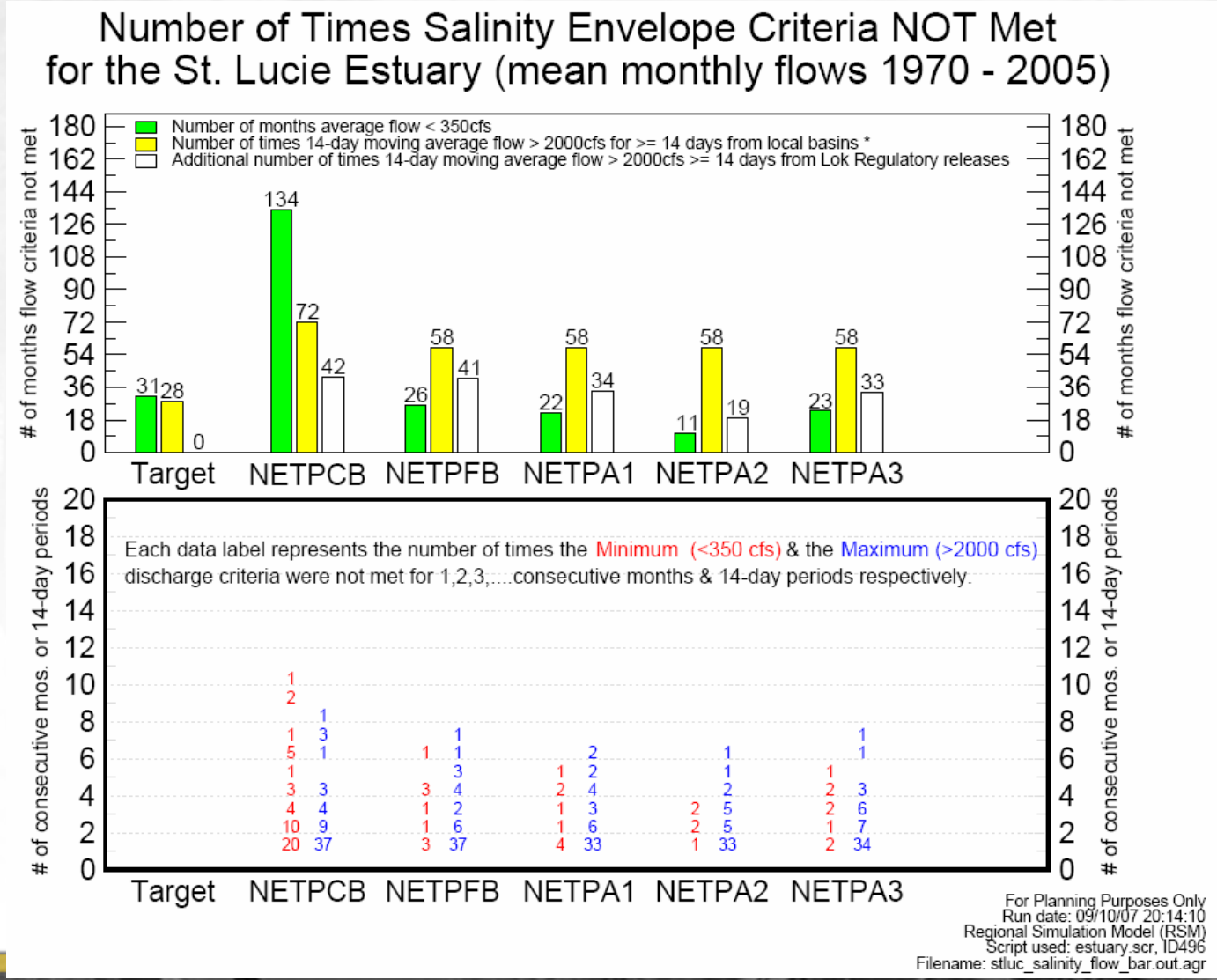
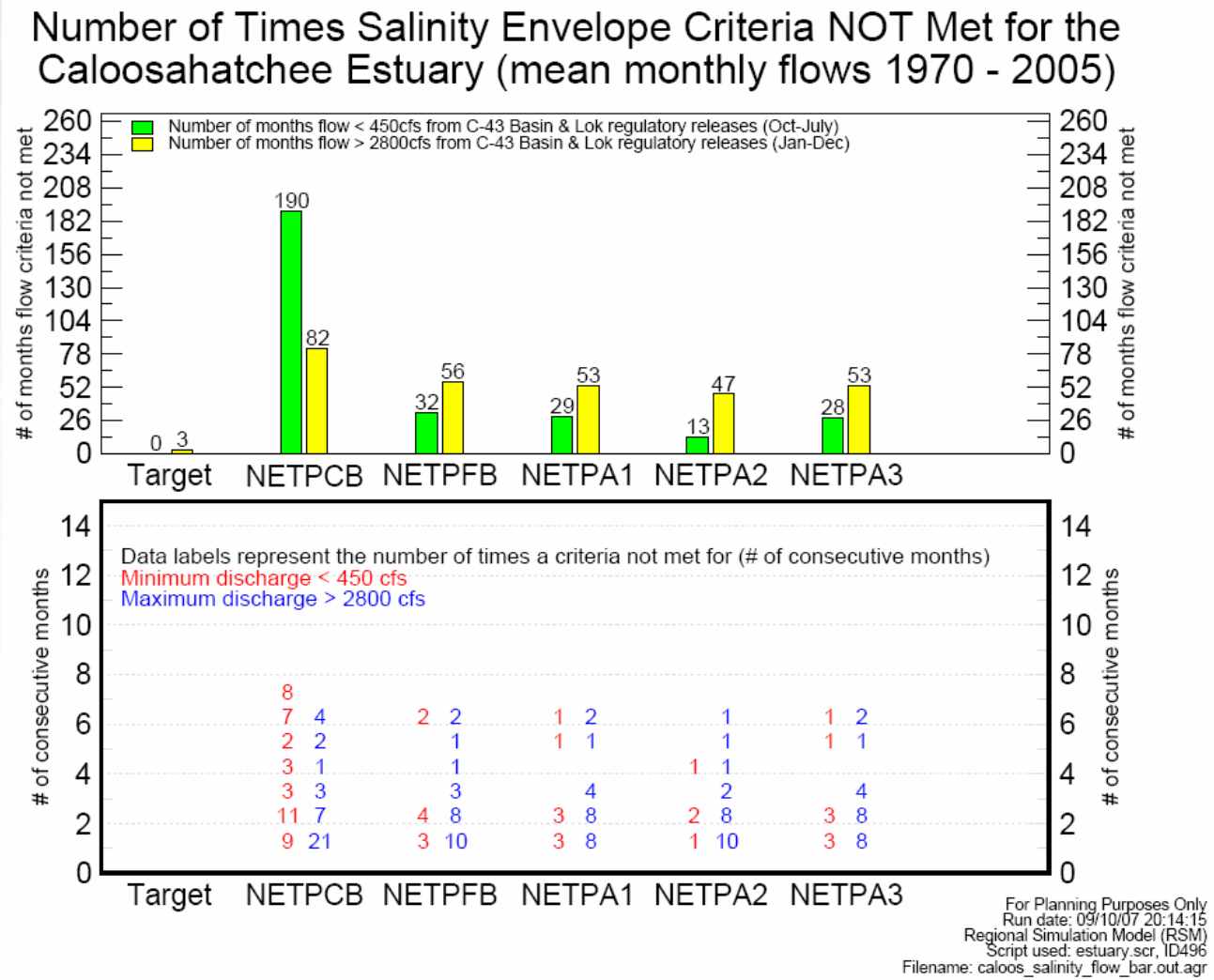




St. Lucie Estuary Performance



Caloosahatchee Estuary Performance

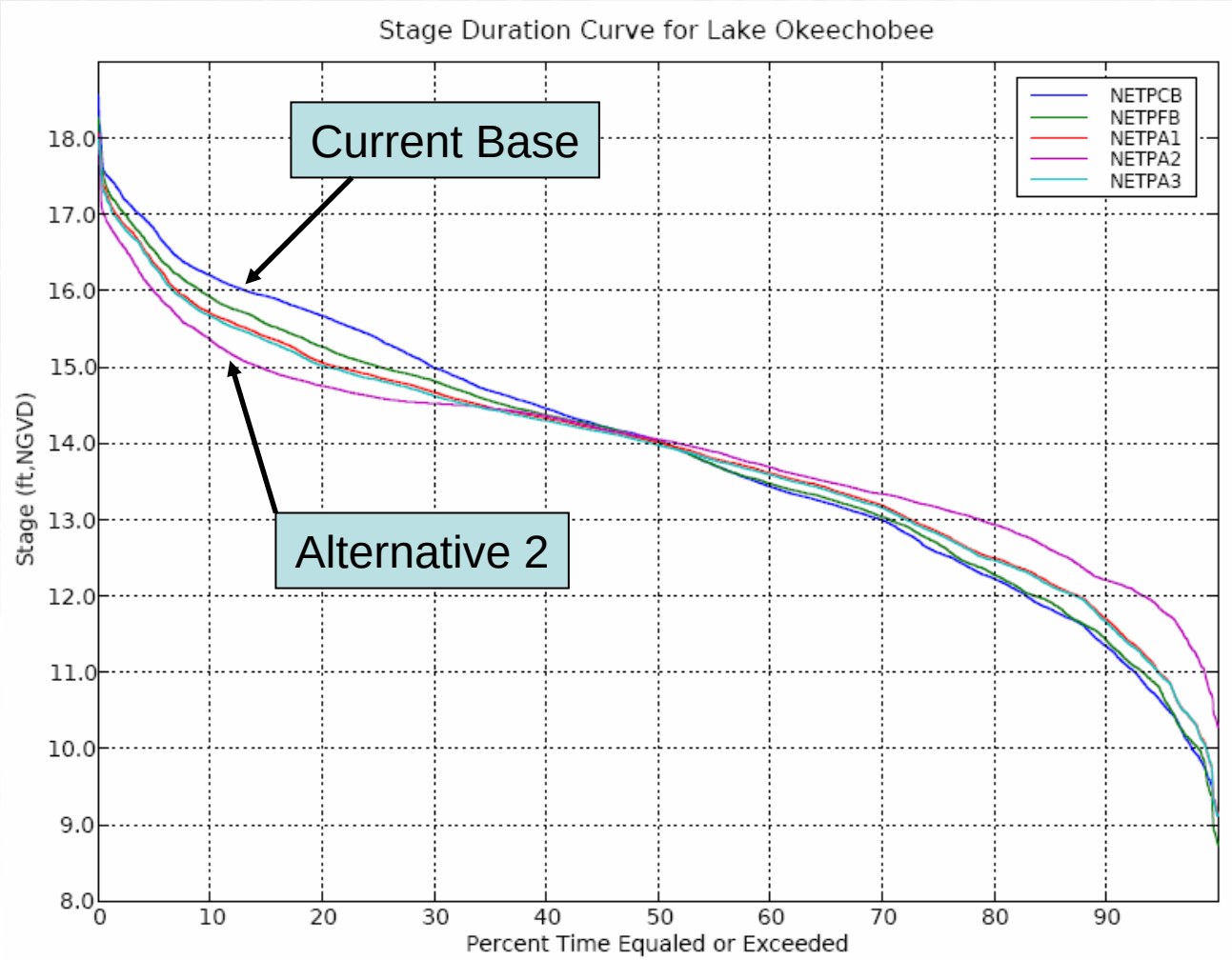


Caloosahatchee Estuary Performance

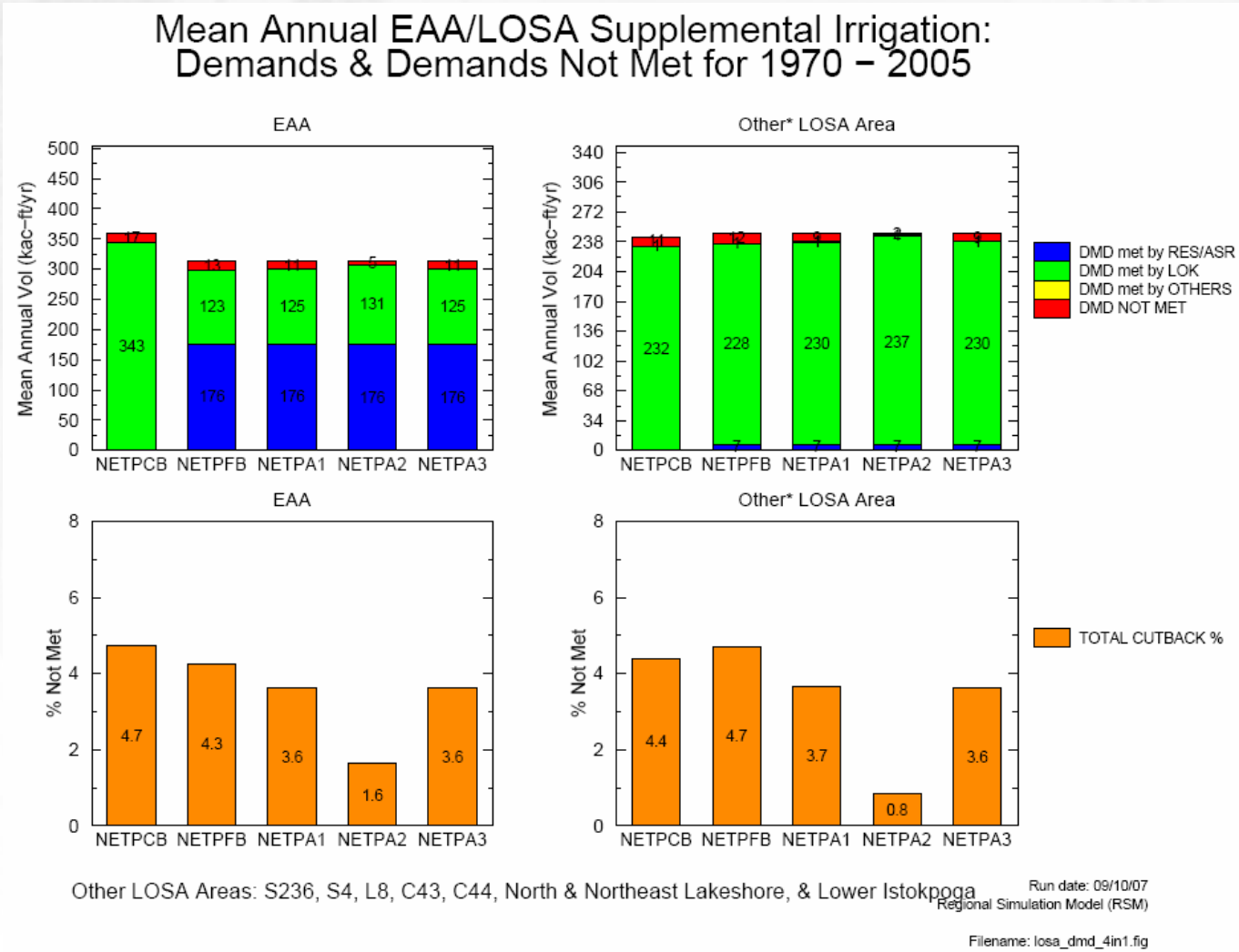
Number of months discharge >2800 cfs (432 month simulation)

	Current Base	Future Base	Alt 1	Alt 2	Alt 3
Number of months S-79 > 2800 cfs	82	56	53	47	53
Number of months Caloosahatchee Basin> 2800 cfs	48	28	27	27	27
Number of additional months >2800 cfs	34	28	26	20	26
Number of months Lake Okeechobee regulatory discharges> 2800 cfs	19	14	13	9	13

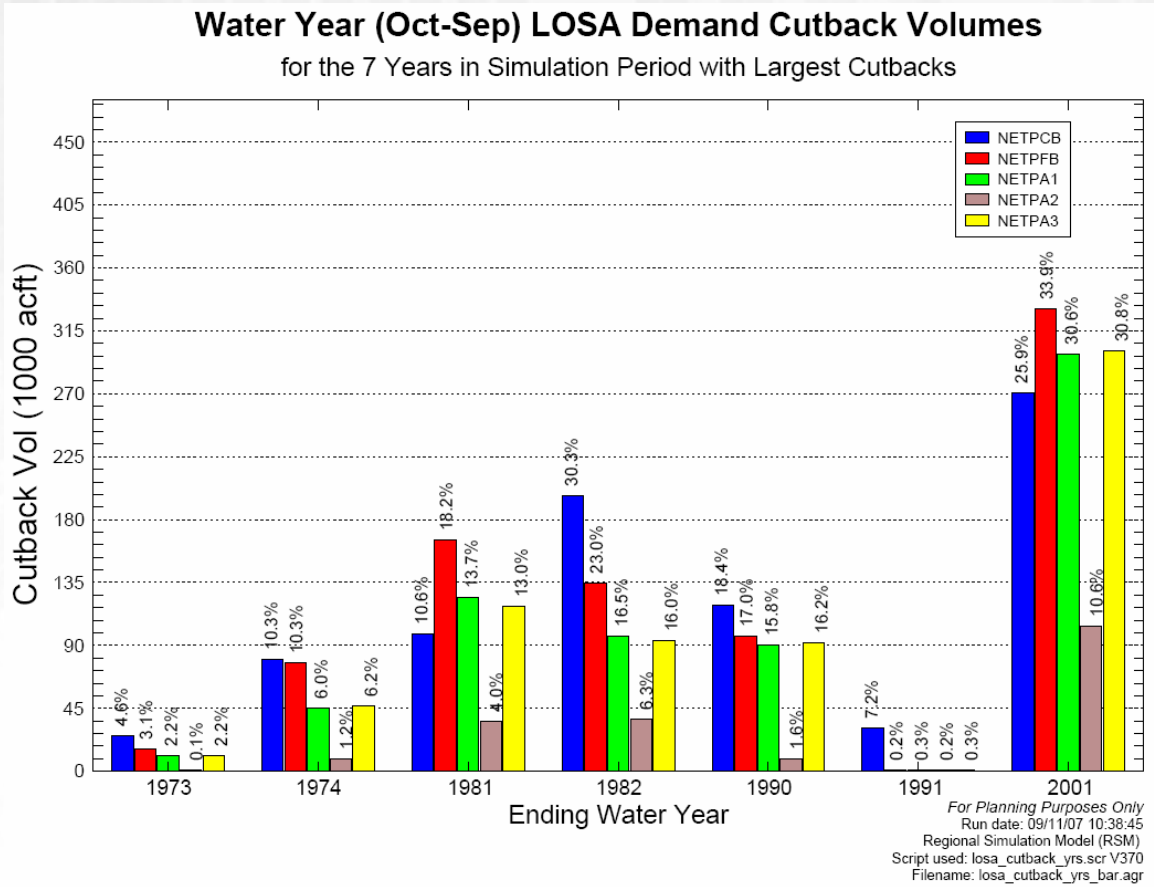
Lake Okeechobee Stage Duration



Water Supply Performance



Water Supply Performance



Alternatives 2 and 3 Water Quality Analysis

Summary of Phosphorus Loading with Alternative 2 & 3

- **See attachment for water quality results**

Next Steps in Planning Process

- **Alternative 4- Integrate Alternatives 2 and 3**
- **Additional analysis related to the storage goal requirement of legislation**
- **Complete preliminary evaluation of availability of water from Upper Kissimmee Watershed**

Topics to be included in report

- **Background and Summary of Previous Studies and Ongoing Projects**
- **Review Water Quality of Basins flowing into Lake Okeechobee**
- **Water Budget Analysis**
- **Formulation of Alternatives**
- **Alternative Evaluation, Comparison, and Description of Recommended Plan**
- **Recommended Projects and Actions**
- **Plan Refinement and Revision**


Questions